

Biodiversity and climate programme

MARCH 2023



Finsilva 

Sustainable and profitable forestry

Finsilva wants to be a well-known pioneer and influencer in the responsible and diverse utilisation of forest and natural capital.

The development of biodiversity and the carbon sequestration of forests is a huge business opportunity for Finsilva. We profit from our responsible operations in the financial, service and product markets.

This biodiversity and climate programme presents the most important measures to increase biodiversity and address the climate change challenge. We update the programme based on the latest research-based knowledge and the results of development work.

Juha Hakkarainen
CEO, Finsilva plc

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Forest and natural capital company Finsilva

Finsilva plc is one of Europe's largest private and independent forest owners. We combine environmental values with market economy by putting natural capital to work in a sustainable and profitable way.

Our main industry is forestry, in addition to which we are an enabler of the growth of renewable energy. Our business also includes real estate development. We develop new forms of forest and land use that are based on the changing needs of people and society.

We produce new ways of practising modern sustainable forestry. We concentrate on the production of valuable wood raw material and facilitate the production of various wood-based bioproducts.

We create genuine business out of the environment market and offer an attractive development environment for renewable energy projects. We sell land and conclude concession contracts for solar and wind parks.

We practice responsible business that adds to local vitality. We participate in the planning of the commercial and recreational use of land areas and help to create conditions for new earning models.

Our ready-to-build lake shore cabin building plots and productive forest holdings are located in viable forests that have been managed with expertise for more than a hundred years.



Finsilva owns roughly 130,000 hectares of well-managed Finnish forest. In 2021, the company turnover was 25.8 MEUR. The company is owned by the forest funds of Dasos, and Metsärahassto II Ky (Ilmarinen).



Background and objective

The aim of Finsilva's biodiversity programme is to safeguard and increase the biodiversity of forests. This is achieved by developing new practices to improve biodiversity, increasing active nature management, protecting valuable areas, promoting research and stakeholder cooperation and by monitoring and analysing the biodiversity impacts of our measures. Our goals are nature-positive forestry by 2030 and continuous improvement.

With its programme, Finsilva contributes to the achievement of Finland's climate goals and carbon neutrality by 2035: we increase carbon sinks and pools and facilitate the production of clean energy.

Measures in accordance with the biodiversity programme do not only improve the state of endangered forest species and habitats, but also ecosystem services, water protection, game management, the recreational use of forests and the mitigation of climate change.

In line with our strategy, we facilitate the development of renewable energy, participate in the shaping of the carbon and biodiversity offset market and utilise our responsible operations in the financial, service and product markets.

As a natural capital company, Finsilva regards efforts towards biodiversity and carbon neutrality as investments with the potential of additional market income.



Valuable natural sites

Important habitats in terms of biodiversity are the following:

- Herb-rich forests
- Pristine spruce mires
- Exposed southern slopes on eskers and terminal moraines
- Flood forests and deciduous swamp forests
- Forests abundant in decaying wood, rugged primeval forests
- Riparian forests along small water bodies

The key structural features in terms of biodiversity are the following:

- Decaying wood and retention trees
- Burnt wood
- Aspen and other large broad-leaved trees





Climate smart forestry

We act for the climate through the means of climate smart forestry by increasing tree growth and curbing emissions into the soil. We promote and facilitate the use of wind power, solar power and renewable wood raw material for the replacement of fossil raw materials. The implementation of our climate actions and the achievement of our goals is monitored annually.

From the viewpoint of forestry, the most important threat posed by climate change to forest growth is the increasing risk of forest damage. Adaptation to climate change and ensuring the growth capacity of forests through timely forest management is a good way of decreasing the risks of climate change.

The health, viability and damage resistance of forests is crucial to Finsilva. Choosing the right tree species for the right habitat is a major means of adaptation. It is also essential to identify butt rot areas already before logging and consider this information in the selection of the renewal method and the tree species.

According to the calculations of Natural Resources Institute Finland, the carbon storage of Finsilva's tree stand is about 17 Tg CO₂eq, i.e. about 131 t CO₂eq. ha⁻¹. In mineral soil areas the carbon storage of forest soil is about 20 Tg CO₂eq. According to Natural Resources Institute Finland, the average carbon storage of peatland is about eight times higher than that of mineral soil. This means that the carbon storage of Finsilva's peatlands is about 40 Tg CO₂eq.

Based on Finsilva's forest management strategy and forest treatment forecasts, the carbon sinks and pools of both the tree stand and forest soil are expected to increase in the next 50 years.

The majority of the climate benefits produced by Finsilva is generated by the replacement of fossil raw materials. The annual carbon content of round wood harvested from Finsilva's forests is over 0.4 Tg CO₂eq.

In 2021, wood placed on the market by Finsilva reduced CO₂ emissions by an estimated 300,000,000 kilograms. This roughly corresponds to the annual CO₂ emissions of 80,000 internal combustion engine cars.

We facilitate the production of renewable energy (wind and solar power) and aim for a renewable energy capacity of 1,600 MW by 2035. This means a significant reduction in fossil CO₂ emissions.



Tree stand is about
17 Tg CO₂ekv
131 tn CO₂ekv ha⁻¹

Carbon storage of
forest soil in mineral
soil areas is about
20 Tg CO₂ekv

Carbon storage of
peatlands is about
40 Tg CO₂ekv

The annual carbon content
of round wood is over
0,4 Tg CO₂ekv

Aim for a renewable
energy capacity by 2035
1600 MW



Forest certification

Finsilva's forests have been certified in accordance with both the PEFC and the FSC forest certification system. The forest certification requirements, in particular those of FSC, create a clear requirement level for Finsilva's nature management.

In sustainable forest management, natural values and wood production are in balance – the biodiversity of forest nature and the cultural and recreational values of forests are preserved while practising productive, responsible and socially sustainable forestry. Forest certification promotes the market access of wood and wood products.



FSC-C139460

Forest certificates

FSC is an abbreviation of the words Forest Stewardship Council. FSC is the world's most trusted responsibility certificate for forestry products. The FSC certificate guarantees that forests are utilised with respect for the environment and human rights. For more information, please visit [fsc.org](https://www.fsc.org)



PEFC/02-21-18/4

PEFC (Programme for the Endorsement of Forest Certification) is an international forest certification system that promotes ecologically, socially and economically sustainable forestry. For more information, please visit [pefc.fi/english](https://www.pefc.fi/english)



Herb-rich forests

About 45% of endangered forest species live primarily in herb-rich forests, whereas only 1-2% of the surface area of Finland's forests is covered by such forests. Finsilva's herb-rich forests have been mapped as part of the FSC process.

They are treated with an emphasis on biodiversity-enhancing forest management actions instead of tree cultivation. The best sites are protected. Herb-rich forests with decaying wood are usually so valuable for biodiversity that they meet the criteria for sites to be preserved in accordance with the certification.



Habitat improvement projects

Finsilva preserves or improves the natural values in forested habitats where active nature management or restoration is needed for this purpose. Such sites include, for example, wetlands, swamps and flowing waters.



Water protection

Finsilva takes care of water protection through sufficient protection zones and taking water protection measures in connection with its operations.

The requirements set out in the forest certification and the Forest Act are used as minimum requirements on water protection. The water protection methods used by Finsilva have been described in detail in Metsä Group’s work instructions on harvesting, soil preparation, drainage prepare and fertilisation.

A water protection plan is drawn up for all drainage prepare sites and those peatland soil scarification sites that are significant in terms of water protection.

We actively participate in the development of water protection in forests and projects promoting it, such as the Puumavesi project for researching the efficiency of a new biological water protection method utilising wood.

We establish wetlands at suitable sites.

We have participated in, for example, the following research and development projects:

B4est, 2020–2022
Natural Resources
Institute Finland

Forest management regimes of mixed forest (SEKAVA), 2021–2023
Natural Resources
Institute Finland

Tekopöly: The benefits of artificial high stumps for pollinators and biodiversity, 2021–2022
University of Helsinki

LUOMUHAKKUU: Testing Precise Logging Methods, 2022–2024
University of Helsinki



Forestry in peatlands and restoration of swamp nature

One third of Finland's land area is covered by peatlands. Finsilva's peatlands constitute about 22% of the land area.

Maintaining a sufficient evaporating tree stand protects the peat carbon stock and reduces the greenhouse gas emissions caused by peat decomposition, as well as the need for drainage prepare that pollutes water bodies.

A key objective in the management of peatland forests is to keep the water level even and at a suitable height. Drainage prepare is only done in response to a real need. In such a case, the depth of the ditch is kept reasonable. Finsilva does not construct new ditches.

At sites where drainage prepare is performed, the growth of the tree stand must have been slowed down by the rising groundwater level. The poor condition of ditches is in itself not a sufficient reason for drainage prepare, as the evaporation from the tree stand is often enough to keep the groundwater level sufficiently low to allow tree growth.

Nutrient imbalance is corrected with ash fertilisation, and the increasing growth produces more evaporation. This further reduces the need for drainage prepare.

Drainage prepare is usually not needed if the volume of the tree stand is over 70 m³/ha (pine-dominated) or over 60 m³/ha (spruce and birch-dominated) and the ditches of the area have become shallow. The drained area must not be extended in the drainage prepare phase.

At suitable peatland sites, one option is to apply continuous cover forestry. The continuous evaporation from the tree stand reduces the need for drainage prepare, diminishing the harmful effects on both climate and water bodies.

For some drained sites with poor growth, the best solution is to leave them to recover. Sites suitable for active restoration are restored.

A key objective in the management of peatland forests is to keep the water level even and at a suitable height.





Decaying wood

One fourth of Finland's forest species need decaying wood for living. Thus, decaying wood is the most important biodiversity-enhancing forest resource that can be influenced also by nature management in commercial forests. In addition to quantity, quality and continuity are essential for the species that are dependent on decaying wood. The decaying wood in the forests should display variation in size and degree of decay, and there should be both vertical and horizontal decaying wood.

Retention trees and artificial high stumps are used to increase the amount of decaying wood, as it is important for many endangered species. Finsilva's goal is to make four artificial high stumps per hectare.

The trees retained in regeneration logging always include robust trees from the previous generation of the main tree species, all broad-leaved trees, nesting trees of raptors, robust junipers, large

aspens and alders as well as tree-like great willows and trees with a fire wound.

Fallen healthy trees that are fit for use as timber are harvested. Wood that is not fit for use as timber is left unharvested. To meet the requirements of the certification criteria, dead stemwood with a diameter of more than 10 cm is not harvested as fuel wood.

In retention tree groups, the ground is left unbroken and surrounded by a protection zone unaffected by soil preparation. Further, the base of retention tree groups is left uncleared. The location and size of retention tree groups are at least marked on the maps of stands marked for cutting, but they can also be pegged out if necessary. As far as possible, the retention tree stand of compartments or even of stands marked for cutting is always concentrated into sites that are valuable in terms of forest nature management.

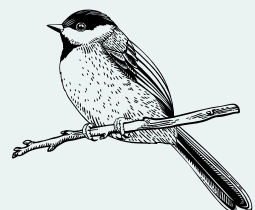


Protective thickets

Protective thickets are left in Finsilva forests in all phases of forest management. The dense growth of trees and bushes provides shelter and food for animals. Game management is not the only function of protective thickets.

Protective thickets for the purposes of game management are primarily implemented in connection with protection zones, natural sites and retention tree groups. Other good places include humid depressions, dells, tension zones between swamps and coniferous forests, problematic sites in terms of forest management, artificial high stumps and concentrations of decaying wood.

Retention trees and artificial high stumps are used to increase the amount of decaying wood, as it is important for many endangered species.





Mixed tree stands and mixed cultivation

Mixed forests are more sustainable and diverse than one-species forests, and they grow well. Mixed cultivation is suitable for Myrtillus-type forests and, in elk damage areas, also for Vaccinium-type forests. It is a good choice also for compartments of varying soil fertility, because the growth potential of the area can be better utilised with this method. The method is particularly suitable for areas with elk damage risk, but it also reduces other damage risk.

In Finsilva's forests, mixed cultivation is implemented by planting equal numbers of spruce and pine at a common density of 2000 pcs/ha. On rough soil, a combination of pine seeding and spruce planting can be used, in which case the spruce count is 1,000 pcs/ha and the rest of the spots are used for pine.



Broad-leaved trees

In young stand management and thinning, broad-leaved trees that are important in terms of biodiversity are preserved: aspens, great willows, rowans and alders, some of which grow robust enough to be future retention trees.

All broadleaved trees, willows, bird cherries, rowans and alders with a diameter of over 10 cm are preserved, as well as robust aspens with a breast height diameter of over 40 cm. Trees left in groups have particularly good chances of developing into retention trees.

Finsilva's logging and management work is carried out so that at least 10% of the tree stand's stem count is made up of broad-leaved trees already at the young stand management stage.

The cultivation of silver birch is primarily targeted at areas where spruces of the previous tree generation were subject to annosus root rot. Areas susceptible to elk damage must be avoided in the selection of cultivation sites.

Mixed cultivation is implemented by planting equal numbers of spruce and pine at a common density of 2000 pcs/ha.





Conservation and the Metso and Helmi programmes

5.7% of Finsilva's forests, i.e. a total of 7,500 hectares are outside of the scope of forest treatment. 4.6% of the forest area is in the scope of special forest treatment methods.

During 2012–2022 Finsilva has established 33 private nature conservation areas under the Metso programme. In addition, Finsilva has 31 private conservation areas that were established in 1945–2010.

We take a very positive stance on the voluntary Metso and Helmi programmes and actively look for sites that are suitable for them.



Controlled burning

Finsilva performs controlled burning on 3% of burnable regeneration areas each year and also maps and burns areas suitable for controlled burning for the purpose of nature management.

The controlled burnings are mainly performed through burning retention tree groups, producing burnt wood. The aim is to produce at least 20 fire-damaged stems with diameters of over 20 cm on each hectare of the burnt area. The stems can also be already dead. Spatial continuity is important for species specialised in burnt wood.



Active participation in research and development operations



We actively promote versatile forest-related research and development operations. We cooperate with educational and research institutions e.g. by offering our forests for use as

sample plots even in long-term studies. Through research and development work, we increase information and knowledge on sustainable forestry and create conditions for our own success.



Ecological compensations to prevent biodiversity erosion

Wind and solar energy are sustainable forms of renewable energy. Acceptability can be improved through compensations for forest and biodiversity loss. Finsilva prevents biodiversity loss caused by renewable energy projects through additional forest protection or restoration, thus compensating for the unavoidable negative effects associated with the projects' construction phase. Finsilva's aim is to implement biodiversity-positive renewable energy projects.



Implementation and monitoring of the programme

In 2023, we drew up a scenario about the future development of biodiversity in Finsilva's forests up until 2050 based on the measures of the programme.

We monitor and report annually on the quality level of forest management, thinning, regeneration cutting and nature management, ensuring that our specified nature management measures and objectives are implemented in practice. Our goal is continuous improvement!



In our monitoring, we look at different biodiversity indicators such as

- the number and location of retention trees
- the quantities of decaying wood and artificial high stumps
- the quantity of mixed tree stand and the quantity of protective thickets
- the widths of water bodies' protection zones and possible damage in the protection zones
- consideration of endangered species and habitats that are important for biodiversity

Nature quality follow-up is implemented through systematic self-monitoring and annual monitoring by independent external experts. In addition, we receive the nature management quality follow-up results of the Finnish Forest Centre each year. The forest certifications (PEFC and FSC) are also part of the monitoring.

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